Bonytail

The bonytail uses mainstem river channels as well as inundated riparian areas. Currently, no self-sustaining populations of bonytail exist in the wild, and few individuals have been caught throughout the Upper Colorado Basin (USF&WS 2002d). Bonytail have been stocked in this reach since 1996; however, these populations have not thrived, and there has been no recruitment (NPS 2003). Only five individuals, all from Cataract Canyon, were collected during surveys by Valdez and Williams from 1985 to 1988 (NRC 1999). The presence of this rare fish near the Moab site has not been confirmed (NRC 1999).

#### *3.1.10.2 Environmental Tolerances*

The aquatic environment in the reach of the Colorado River bordering the Moab site is potentially affected by activities at the site. Ground water flow from the pile has introduced chemical and radioactive contaminants into the surface water (see Section 3.1.7.3). Tolerance of the aquatic biota to the contaminants is dependent on their life-stage, location, and duration of exposure. Appendix A1, "Biological Assessment," provides further information on contaminants and their effects on the aquatic biota.

### 3.1.11 Terrestrial Ecology

Historically, the entire site has been disturbed from natural events such as floods or from milling operations. At present, the relatively barren terrain of the site limits the potential for terrestrial wildlife habitat, with the exception of the southeasternmost portion of the site, where tamarisk are dominant. Approximately 380 acres of the site do not currently support vegetation. Mature tamarisk, with minimal understory, covers approximately 50 acres of the site east of the tailings pile on the Colorado River floodplain. This area provides some habitat for birds and small mammals. Steep rock mesas dominate the area just west of the site. Low-growing desert shrub communities and low-density piñon-juniper forest are the predominant vegetation types west and north of the site along the transportation routes.

#### *3.1.11.1 Terrestrial Vegetation and Wildlife*

The existing vegetation reflects a history of disturbance. Plants observed in April 2003 include spike dropseed (*Sporobolus contractus*), sand dropseed (*Sporobolus cryptandrus*), tamarisk (*Tamarix ramosissima*), black greasewood (*Sarcobatus vermiculatus*), gray rabbitbrush (*Ericameria nauseosa*), Douglas rabbitbrush (*Chrysothamnus viscidiflorus*), big sagebrush (*Artemisia tridentata*), and galleta (*Pleuraphis jamesii*). The presence of tamarisk and low-density black greasewood indicates that ground water occurs within 20 to 50 ft of the surface.

Vegetation across the Colorado River, including the Matheson Wetlands Preserve, provides more attractive habitat and consists of riparian woodland, grassland, and shadscale (saltbush) communities. Woodland, dominated by native tree species such as black willow (*Salix nigra*) and Fremont cottonwood (*Populus fremontii*), is present in the preserve. Other plants include tamarisk, sedges (*Carex* spp.), bulrush (*Scirpus* spp.), and cattail (*Typha* spp.) (NRC 1999). More than 175 species of birds have been observed at the preserve, and a great blue heron (*Ardea herodias*) rookery is present in its lower end (NRC 1999).

Without the current disturbance, the potential natural vegetation (i.e., vegetation that would occur in the absence of disturbance) and habitat of the upland soils at the site, Nakai sandy loam (see Section 3.1.2), would include grasses such as Indian ricegrass (*Achnatherum hymenoides*)

and galleta and the desert shrubs fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), and winterfat (*Krascheninnikovia lanata*). Because of a relatively high composition and productivity of palatable grasses and shrubs in the potential vegetation (Table 3–10), these plant species would normally be of value as forage for livestock. This relative diversity of the potential vegetation could also provide habitat for a variety of small mammals, including white-tailed prairie dog (*Cynomys leucurus*), desert cottontail (*Sylvilagus audubonii*), and black-tailed jackrabbit (*Lepus californicus*). Fourwing saltbush, shadscale, and galleta may be used to some extent by mule deer (*Odocoileus hemionus*) as forage. Coyote (*Canis latrans*), bobcat (*Lynx rufus*), and badger (*Taxidea taxus*) could frequent this area to prey on the small mammals. Raptors, including golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), and rough-legged hawk (*Buteo lagopus*), could also use this area as hunting ground.

*Table 3–10. Characteristics of the Potential Vegetation on the Nakai Soil Type*

| Soil Name | Range Site | Characteristic Potential Vegetation | (percent) | Productivity (lb/acre) | Rooting Depth (inches) |
|---|---|---|---|---|---|
| Nakai | Desert Sandy Loam | Fourwing saltbush (*Atriplex canescens*) | 10 | 350–700 | 40 to >60 depending on depth to bedrock |
| | | Shadscale (*Atriplex confertifolia*) | 10 | | |
| | | Winterfat *(Krascheninnikovia lanata)* | 5 | | |
| | | Torrey Mormon tea (*Ephedra torreyana*) | 5 | | |
| | | Indian ricegrass (*Achnatherum hymenoides*) | 20 | | |
| | | Galleta (*Pleuraphis jamesii*) | 10 | | |
| | | Sand dropseed (*Sporobolus cryptandrus*) | 5 | | |
| | | Globemallow (*Sphaeralcea* spp.) | 10 | | |
| | | Locoweed (*Astragalus* spp.) | 5 | | |

Source: NRCS (2002); SCS (1989).

### *3.1.11.2 Threatened and Endangered Species*

This section describes the terrestrial (plant and wildlife) threatened and endangered species that are, or may be, present in the project area. Threatened and endangered plant and wildlife species are those species listed in 50 CFR 17 as threatened, endangered, or candidate species and are subject to USF&WS Section 7 consultation under the Endangered Species Act (ESA). USF&WS (2003) lists 19 threatened and endangered animal species and 24 threatened and endangered plant species for the state of Utah. In March 2003, DOE requested an updated list of threatened and endangered species from USF&WS that may be present or affected by DOE's proposed alternatives. USF&WS responded in April 2003 with a list for Grand County that included one threatened plant, five threatened and endangered animal species, and two animal species that are candidates for protection under the ESA. These are listed in Table 3–11. UDWR (2003a) has identified the white-tailed prairie dog as being considered for candidate status. The status of each of these species in the vicinity of the Moab site is briefly discussed below. Appendix A1, "Biological Assessment," provides more detailed information concerning these federally listed species that may be in the vicinity of the site or could be affected by activities or contaminants at the site.

Jones' Cycladenia

The federally threatened Jones' cycladenia is known to occur relatively near the Moab site. However, USF&WS has determined that this plant species would likely not be located in the proposed project areas. Jones' cycladenia grows in gypsiferous soils that are derived from the

Summerville, Cutler, and Chinle Formations; they are shallow, fine textured, and intermixed with rock fragments. The species can be found in Eriogonum-ephedra, mixed desert shrub, and scattered piñon-juniper communities at elevations ranging from about 4,000 to 6,800 ft. It is restricted to the canyonlands of the Colorado Plateau in Emery, Garfield, Grand, and Kane Counties, Utah, as well as in immediately adjacent Coconino County, Arizona (UDWR 2003a).

*Table 3–11. Federally Listed Terrestrial Threatened and Endangered Species Potentially Occurring at the Moab Site*

| Common Name | Scientific Name | Habitat Present and Affected | Species Present | Status | Comments |
|---|---|---|---|---|---|
| Jones' cycladenia | *Cycladenia humilis* var. *jonesii* | Possible | No | Threatened | None |
| Southwestern willow flycatcher | *Empidonax traillii extimus* | Possible | Unknown | Endangered | Likely migrate through area |
| Bald eagle | *Haliaeetus leucocephalus* | Possible | Yes | Threatened | Proposed for delisting |
| Mexican spotted owl | *Strix occidentalis lucida* | Possible | No | Threatened | None |
| California condor | *Gymnogyps californianus* | No | No | Endangered | None |
| Black-footed ferret | *Mustela nigripes* | No | No | Endangered | None |
| Yellow-billed cuckoo | *Coccyzus americanus* | Possible | Unknown | Candidate | None |
| Gunnison sage grouse | *Centrocercus minimus* | No | No | Candidate | None |

Southwestern Willow Flycatcher

Southwestern willow flycatchers (*Empidonax trailii extimus*) are among the few bird species known to nest in habitat dominated by exotic species such as tamarisk and Russian olive (*Eleagnus angustifolia*), invasive species that are prevalent along much of the Colorado River corridor. However, it appears that higher quality habitat exists where tamarisk is intermixed with other trees and shrubs, along with the presence of natural flood regimes, ample water, and beaver activity (USGS 2001). The southwestern willow flycatcher typically nests in riparian areas with dense thickets of trees and shrubs that are on average 13 to 23 ft in height, with dense foliage from 0 to 13 ft above ground. The percent canopy cover is generally high (50 CFR 17).

The southwestern willow flycatcher has been identified as potentially occurring in the Matheson Wetlands Preserve and also several miles downstream of the Moab site. No nesting activity was observed in these areas, and the species has not been observed on the Moab site proper (NRC 1999). Surveys of potentially suitable habitat were conducted along the Colorado River, approximately 6 river miles south of the site in 2002. Willow flycatchers (subspecies not specified) were present during one survey in May (USGS 2002). The survey report concluded that willow flycatchers in this area were migrating and were not using the area for breeding. These results reflected conclusions of a 3-year study (1999 to 2001). However, the study recommended continued monitoring. No designated critical habitat for this species exists within the site area or along transportation corridors.

It appears that the Moab site is at or beyond the northern extent of the range for the southwestern willow flycatcher. According to UDWR (2003a), the known distribution for the southwestern willow flycatcher in Utah is limited to the southern parts of the state. USF&WS (2002e) identifies southern Utah as the north-central limit of the flycatcher's breeding range. However, a similar subspecies, *E.t. adastus*, occurs at higher elevations in central and northern Utah, and the subspecific identity of these two subspecies in the vicinity of the Moab site remains unresolved (USF&WS 2002e).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) ranges over much of North America, and wintering grounds include many areas in Utah (National Geographic Society 1987). The population throughout the lower 48 states has increased significantly during the last several decades, to the point that USF&WS has submitted a proposal to remove the bald eagle from the list of threatened species (64 FR 36453–36464 [1999]). Bald eagles generally avoid areas with nearby human activity and development. Only four nest sites were known in Utah as of 2000 (UDWR 2003a), and none of these are near the Moab site or any of the other sites considered in this analysis. Nesting habitat for this species is limited in the vicinity of the Moab site and does not exist along the proposed transportation corridors between the Moab site and the proposed borrow locations. The BLM Grand Resource Area Management Plan/Environmental Impact Statement (BLM 1985) identified the threatened bald eagle as potentially occurring in the Moab area. Suitable habitats along the Colorado River in the vicinity of the Moab site are likely wintering areas. The Utah Gap Analysis Program indicates that wintering habitat occurs in the Moab vicinity (UDWR 1999).

Mexican Spotted Owl

The Mexican spotted owl (*Strix occidentalis lucida*) occupies a variety of habitats, including thickly wooded canyons and humid forests (National Geographic Society 1987) to steep rocky canyons, which is the primary habitat used in Utah. These owls do not build their own nests, but utilize nests built by other animals or suitable naturally occurring sites. Preferred nesting sites are in trees with broken tops but are also in trunk cavities or on cliffs. Spotted owls are nonmigratory.

According to UDWR (2003a), the spotted owl's current range in Utah includes most of the southern part of the state, including much of San Juan County. Small patches of known distribution occur in the southernmost part of Grand County and parts of Uinta and Carbon Counties. Many of these areas are also designated by USF&WS as critical habitat (66 FR 8530–8553). Within these critical habitat areas are protected and restricted habitat areas. Protected habitat "includes all Mexican spotted owl protected activity centers, all areas in mixed-conifer and pine-oak types with slope greater than 40 percent where timber harvest has not occurred in the past 20 years" (UDWR 2003a). Restricted habitat has a similar, but more general, definition and is not tied to specific protected activity centers (i.e., not tied to known nest sites). BLM has identified potentially suitable habitat (Cresto 2003) within 0.5 mile west of the site on the basis of models developed at Northern Arizona University.

California Condor

California condor (*Gymnogyps californianus*) sightings were historically rare in Utah, noted only twice by pioneers in the 1800s. A nonessential experimental population of California condors was established in northern Arizona in 1996 (61 FR 54043–54060 [1996]). Sightings of the birds that were released in northern Arizona were made nearly statewide in Utah in the late 1990s. The known distribution of the California condor in Utah currently consists of the southern third of the state, including most of San Juan County (UDWR 2003a). Individuals may occasionally pass through the Moab area, but they are not likely to land or use habitat in the vicinity of the Moab site or any of the alternative off-site disposal sites or borrow areas.

Black-Footed Ferret

The range of the black-footed ferret (*Mustela nigripes*) historically covered much of the Great Plains and extended west into eastern Utah. Thought to be extinct until 1981, all individuals now in the wild are thought to be the result of a successful captive breeding and reintroduction program. Unconfirmed sightings of naturally occurring ferrets persist throughout eastern Utah (UDWR 2003a).

Black-footed ferrets depend almost exclusively on prairie dog colonies for food, shelter, and denning. The range of the ferret coincides with that of prairie dogs, and ferrets with young have been documented only in the vicinity of active prairie dog colonies. It has been estimated that about 100 to 150 acres of prairie dog colony are needed to support one ferret (USF&WS 1988). Black-footed ferrets were released in Uinta County, Utah, in late 1999, and UDWR now considers much of the central part of Grand County as Critical Value Habitat. Although there may be a few small prairie dog colonies in the vicinity of the Moab site, the Moab region is not considered high-quality habitat for white-tailed prairie dogs (UDWR 2003a), and it is unlikely that colonies of sufficient size to support ferrets occur near enough to the Moab site to be affected by site operations.

Yellow-Billed Cuckoo

The yellow-billed cuckoo (*Coccyzus americanus*) was listed on October 30, 2001 (66 FR 54807), as a candidate species. Nesting habitat is classified as dense lowland riparian areas characterized by a dense subcanopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within about 300 ft of water. Overstory in these habitats may be either large, gallery-forming trees (33 to 90 ft) or developing trees (10 to 27 ft), usually cottonwoods. Nesting habitat is found at low to mid-elevations (2,500 to 6,000 ft) in Utah. Cuckoos may require large tracts (100 to 200 acres) of contiguous riparian nesting habitat. The yellow-billed cuckoo is thus considered a riparian obligate (UDWR 2003a).

Potentially suitable habitat is located south of the Moab site along the Colorado River and possibly across the river in the Matheson Wetlands Preserve. Surveys conducted from 1999 to 2001 south of the Moab site showed few sightings. Sightings that were documented indicated that this species is using potentially suitable habitat as a migrant and is not using the area as breeding habitat (USGS 2001). However, according to USF&WS, there was a breeding record from the Matheson Wetlands Preserve in 1994 (66 FR 38611–38626 [2001]), located across the Colorado River from the Moab site.

Gunnison Sage Grouse

Although the Gunnison sage grouse (*Centrocercus minimus*) may range into southeastern Grand County, it appears that populations of this species in Utah are essentially restricted to San Juan County (UDWR 2003a). It is unlikely that this species would be present at the Moab site. The Gunnison sage grouse was recognized as a species distinct from the greater sage grouse (*Centrocercus urophasianus)* in 2000 (AOU 2000) and was added to the list of ESA candidate species in 2002 (67 FR 40657–40679 [2002]).

White-Tailed Prairie Dog

A petition to list the white-tailed prairie dog as threatened or endangered under the ESA was submitted by a group of environmental organizations in July 2002 (Center for Native Ecosystems

2002). USF&WS is currently evaluating this petition and is considering adding this species to the list of candidates for ESA protection. As previously stated, the Moab site is not considered to be quality habitat for this species (UDWR 2003a), and it is unlikely to occur at or near the site in substantial numbers.

#### *3.1.11.3 Other Special Status Species*

For this EIS, special status species are those that are protected under federal and state regulations other than the ESA, which include the Migratory Bird Treaty Act (MBTA), Executive Order 13186, and Birds of Conservation Concern (USF&WS 2002f). The State of Utah maintains a list of species that it considers threatened, endangered, or otherwise of concern; other federal agencies such as BLM and the U.S. Forest Service (USFS) maintain lists of species considered to be sensitive. However, only those listed by the USF&WS under the ESA are included in Section 7 consultations or in the Biological Assessment. Although special status species are not covered by the ESA and are, therefore, not subject to Section 7 consultations, USF&WS encourages protection of these species.

Table 3–12 lists sensitive plant species considered by state and federal resource agencies to be of concern that may occur in the site region, including transportation routes and borrow areas. A number of the species listed by the State of Utah, or considered sensitive by BLM, are potentially present in the vicinity of the Moab site.

Table 3–13 includes animal species listed by the State of Utah as endangered, threatened, or otherwise of concern that may be present in the project region. The list includes all species identified by UDWR as potentially occurring in Grand County; in some cases, the known population or suitable habitat is well removed from the Moab site. The species listed as endangered or threatened by UDWR are discussed below.

Peregrine Falcon

Peregrine falcons inhabit mountain ranges, river valleys, and coastlines (USF&WS 1999). They prefer to nest on high cliff ledges (National Geographic Society 1987). Peregrine falcons were one of the first species listed as endangered in 1970 (predating the ESA). After a successful recovery program, they are now much more abundant throughout their range, and the species was ultimately removed from the list of threatened and endangered species in 1999 (64 FR 46541−46558). In Utah, the bird is still rare, but primary breeding habitat exists in small, scattered areas throughout the state. The peregrine falcon is believed to be a year-round resident in the vicinity of the Moab site (BLM 1985).

Ferruginous Hawk

Ferruginous hawks (*Buteo regalis*) are found in grasslands, agricultural lands, sagebrush/ saltbush/greasewood shrub lands, and at the edges of piñon-juniper forests. They tend to avoid high elevations, forests, and narrow canyons. Flat and rolling terrain in grassland or shrub steppe are most often used during breeding season. In winter, they use open, arid areas where rabbits, prairie dogs, and other major prey are found. Nest locations show great flexibility, including trees and shrubs, cliffs, creek banks, utility structures, and abandoned buildings; however, they have a preference for elevated nest sites. Ferruginous hawks are widespread throughout the western United States. In Utah, primary breeding grounds are in northern Grand County and in areas of northern and western Utah.